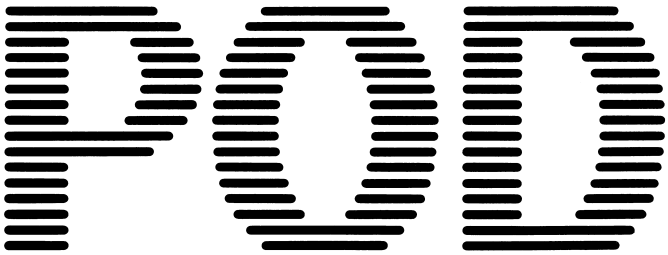
FUJI ELECTRIC

FUJI UG SERIES PROGRAMMABLE OPERATION DISPLAY



USER'S MANUAL

<UG SERIES SX-BUS Communications>

TYPES: UG03I-S
UG02I-S

FEH357a

Preface

Thank you very much for purchasing the Fuji UG Series Programmable Operation Display.
This manual describes how to use the SX-bus interface type.
This manual will help you understand the outline information and to master it efficiently by giving examples in each chapter.
In addition to this manual, the following manuals on the UG Series are available. Please ask your nearest dealer for the appropriate manuals and read them too.

Name	Manual No.	Contents
UG Series User's Manual <Operation>	FEH375	Describes how to operate the screen editor (UG00S-CW) for the UG Series.
UG Series User's Manual <Function>	FEH376	Describes the functions of the UG Series.
UG30 Series User's Manual <Hardware>	FEH377	Describes the hardware of the 530/430/330 Series.
UG20 Series User's Manual <Hardware>	FEH352	Describes the hardware of the 520/420/320/ 220/221 Series.
UG Series User's Manual <Variable Name Cooperation Function>	FEH363	Describes the function to link variable names between UG editor and D300win.

Notes

(1) No part of this manual may be reproduced in any form without the prior permission of the publisher.
(2) The contents of this manual, including the specifications, are subject to change without notice for the purposes of improvement.
(3) This manual was prepared with the utmost care. However, if you find any ambiguity, errors, etc., please contact any of our sales offices that are listed at the end of this manual. When you do so, be sure to quote the manual number given on the cover of this manual.

Record of Revisions

The manual number is shown at the bottom right of the front cover.

Printing Date	Reference No.	Revised Contents
August, 2001	FEH357	1st Edition printed
January, 2003	FEH357a	2nd Edition printed • Explanations on UG30 Series added • Some explanations reviewed added

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Record of Revisions

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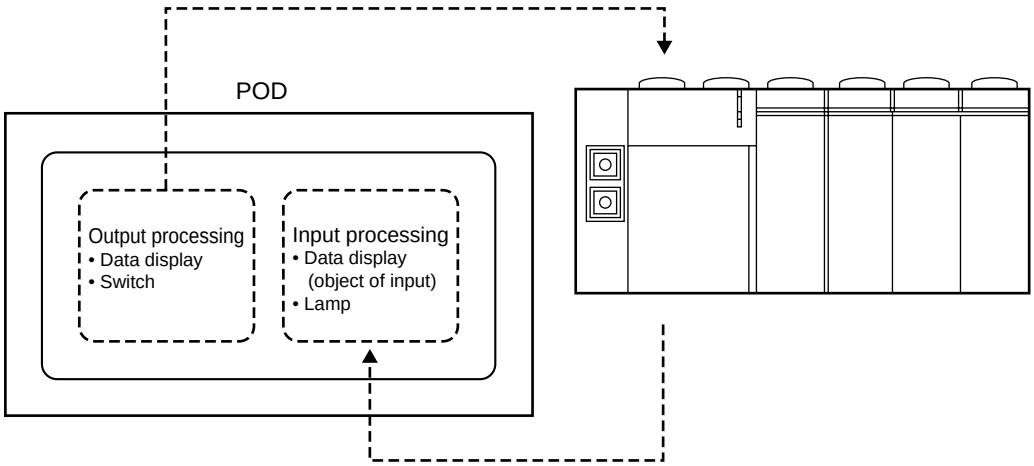
1 General

- This type of SX Bus I/F unit enables high-speed data transmission with MICREX-SX Series PLCs.
- The POD updates the display when there is a change in the read data (POD ← PLC). The read data is the content of the PLC addresses assigned to the display elements, such as the current status of the lamps and counters, which are created on the individual screen the POD displays.
  When a POD switch or counter setting element is operated, the POD sends a write command to the PLC and writes the output data in the PLC internal memory which corresponds to the operation data.
  These operations are automatically performed by POD, and therefore it is unnecessary to create a communications program on the PLC side.

Write command (example): Write the set value of timer 1



Read command (example): Monitor all the data displayed on the screen

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2 Specifications

2.1 Applicable Models

Applicable PLCs

The following PLC models are applicable:

NP1PS-xx :SPH300 Series
NP1PH-xx :SPH200 Series

* No communication module is necessary on the PLC side.

Applicable PODs

Be sure to use the following type of communication unit according to the type of POD you use.

POD type	Type of communication unit
UGx30H-x UG520H-x UG420H-x UG320H-x UG221H-x	UG03I-S
UG220H-x	UG02I-S

* UG420H-Ex (EL display type) and UG320HD (handy type) cannnot be used.

2.2 Communication specifications

The table below shows the communication specifications:

Item	Specification
Transmission line	Dedicated cable *1 Total length 25 m
Connectable sets	Number of PODs connectable in same configuration via SX bus: 8 sets *2
Transmission rate	25Mbps
PLC connecting range	CPU in same configuration *3

*1 For connection, be sure to use the following SX bus extension cable:

Type	Cable length (Unit: mm)
NP1C-P3	300
NP1C-P6	600
NP1C-P8	800
NP1C-02	2,000
NP1C-05	5,000
NP1C-10	10,000
NP1C-25	25,000

When you use UG03I-S, be sure to mount the ferrite core included with the product on the SX bus cable. For the mounting method, refer to "3.1 Mounting the Interface Unit".

*2 Though maximum 8 sets of POD can be connected in one configuration, the total when including the following modules must be 16 sets or less.

- P-link module (NP1L-PL1)
- PC card interface module (NP1F-PC2)
- PE-link module (NP1L-PE1)
- Memory card interface module (NP1F-MM1)
- General-purpose communication module (NP1L-RS1/RS2/RS4)

*3 For more information, refer to the following page.

2.3 Available Areas of PLC Internal Memory

The table below shows the communication specifications:

Memory	Format	Unit	TYPE	Memory range		
				NP1PS-32	NP1PH-16	NP1PH-08
Input memory (I)	%IX	bit	—	%IX■.0.0~ %IX■.511.15	%IX■.0.0~ %IX■.511.15	%IX■.0.0~ %IX■.511.15
	%IW	word		%IW■.0~ %IW■.511	%IW■.0~ %IW■.511	%IW■.0~ %IW■.511
Output memory (Q)	%QX	bit	—	%QX■.0.0~ %QX■.511.15	%QX■.0.0~ %QX■.511.15	%QX■.0.0~ %QX■.511.15
	%QW	word		%QW■.0~ %QW■.511	%QW■.0~ %QW■.511	%QW■.0~ %QW■.511
Standard memory (M)	%MX □.1	bit	2	%MX□.1.0.0~ %MX□1.32767.15	%MX□.1.0.0~ %MX□1.31743.15	%MX□.1.0.0~ %MX□1.15359.15
	%MW □.1	word		%MW□.1.0~ %MW□1.32767	%MW□.1.0~ %MW□1.31743	%MW□.1.0~ %MW□1.15359
Retain memory (RM)	%MX □.3	bit	4	%MX□.3.0.0~ %MX□3.30719.15	%MX□.3.0.0~ %MX□3.31743	%MX□.3.0.0~ %MX□3.15359
	%MW □.3	word		%MW□.3.0.0~ %MW□.3.30719	%MW□.3.0.0~ %MW□.3.31743	%MW□.3.0.0~ %MW□.3.15359
System memory (SM)	%MX □.10	bit	8	%MX□.10.0.0~ %MX□.10.511.15	%MX□.10.0.0~ %MX□.10.511.15	%MX□.10.0.0~ %MX□.10.511.15
	%MW □.10	word		%MW□.10.0~ %MW□10.511	%MW□.10.0~ %MW□10.511	%MW□.10.0~ %MW□10.511

- Memory area is specified basically by variable name linkage. For more information about variable name linkage, refer to “UG Series Manual <Variable Name Cooperation>” (FEH363).
- ■ in the above table is SX station No. (1 to 238).
- □ in the above table is CPU No. (0 to 7).
- Figures for the memory range in the above table are when individual area is set to the maximum. Actual range depends on “CPU memory size” defined on the PLC side.
- TYPE is used when memory is indirectly specified using macros from the POD editor.
- When memory is indirectly specified using macros from the POD editor, be sure to define CPU No. in the extension code.
- Input and output memories (%I, Q) cannot be indirectly specified using macros from the POD editor.

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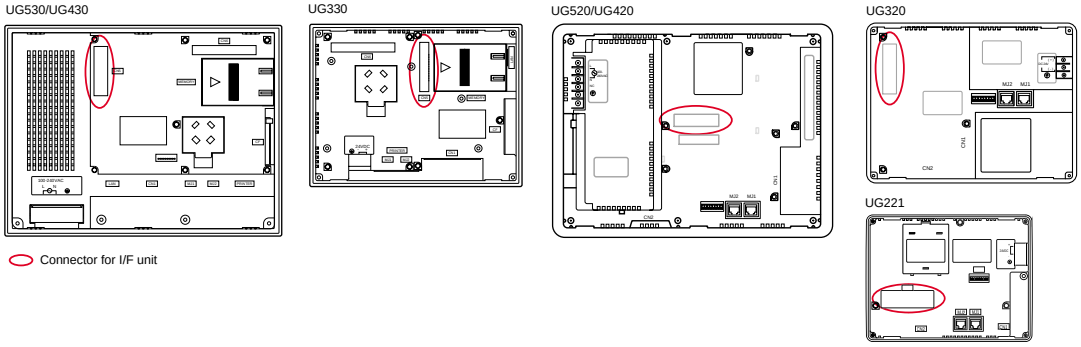
3 Setting and Wiring of POD

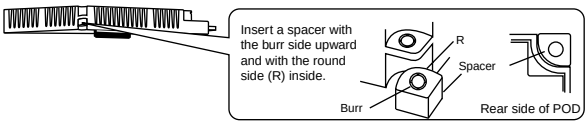
3.1 Mounting the Interface Unit

When UG03I-S is used

• Remove the dust preventive seal from the I/F unit connector (UG30 Series : CN5, UG20 Series : See the figure below) on the backside of the POD, mount the I/F unit and fix it with 3 mounting screws.



• For UG30 and UG320/221 , insert the spacer (supplied with the unit) before mounting the unit. Be sure to check the orientation of the spacer.



• Wire the communication cable. When the POD becomes a termination, be sure to use a loop-back plug.

• Mount the ferrite core that is supplied with the unit on the communication cable to be connected to the IN connector of the POD. The ferrite core should be mounted as near to the POD as possible.

∗ **Tightening the unit mounting screws**

Tighten according to the table below:

Type of screw	Screw size	Tightening torque (N.m)
Unit mounting screw	M3	0.3 to 0.5

• Notes on the CE specification

UG03I-S can be used as CE-approved IF unit ; however, note the following restrictions.

Available models

UGx30H-xx4

UG520H-xC4ZE	UG520H-xC4MZE	UG420H-xC4ZE
UG420H-xC4MZE	UG320H-SC4ZE	UG221H-xx *

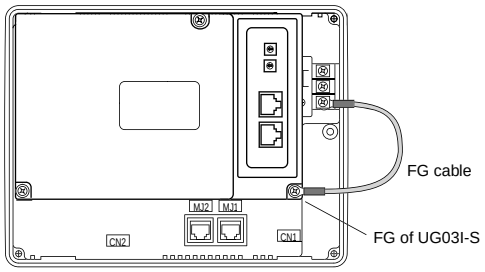
* UG221 of the following and later hardware versions are supported.

UG221H-TC4	-> Version 1	UG221H-SC4	-> Version 2
UG221H-LC	-> Version 1	UG221H-TC4D	-> Version 4
UG221H-SC4D	-> Version 6	UG221H-LC4D	-> Version 5

The hardware version of the unit is indicated in the third digit from the extreme left of the serial number shown on the backside of the unit.

Mounting procedure

When mounting UG03I-S on UG221 for CE specification, connect the FG terminal of UG221 to the FG terminal of UG03I-S using the FG cable supplied with the unit.



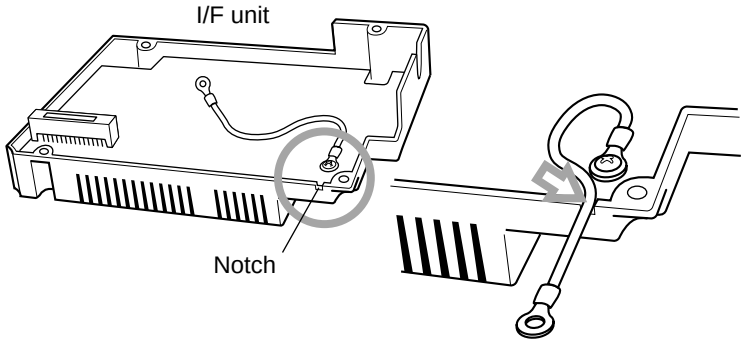
Backside of UG221

Notes on peripheral equipment

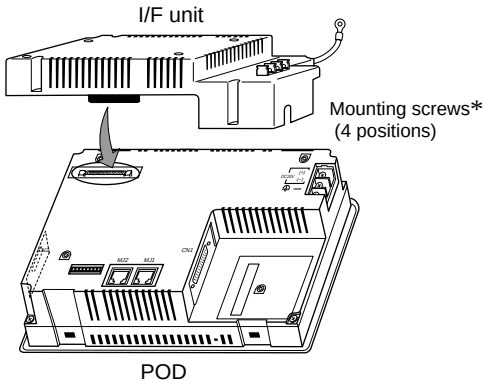
If both UG03I-S and UG00P-MR (memory card recorder) are used at the same time, it is not possible to make UG03I-S CE-approved.

When UG02I-S is used

• Route the insulated cable through the notch.

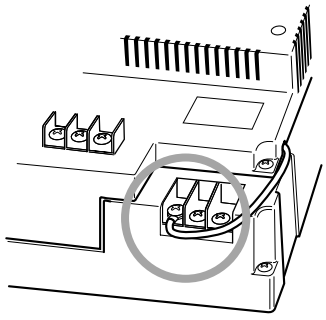


• After removing the dust preventive seal which is stuck on the rear of the POD, mount the I/F unit at the position shown in the figure below and fix it with the 4 mounting screws (M3 × 8) supplied with the unit.



• Connect the insulated cable with the ground terminal on the POD.

• Wire the communication cable. When the POD becomes a termination, be sure to use a loop-back plug.



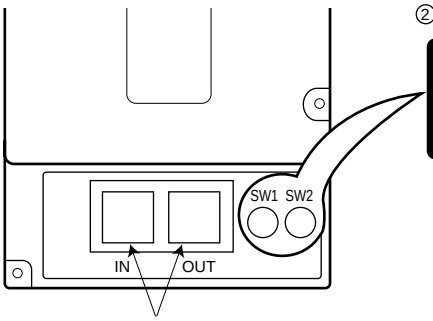
*** Tightening the unit mounting screws**

Tighten according to the table below:

Type of screw	Screw size	Tightening torque (N.m)
Unit mounting screw	M3	0.3 to 0.5

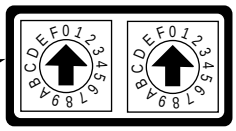
3.2 Cable Connection and Station Number Setting

• UG03I-S

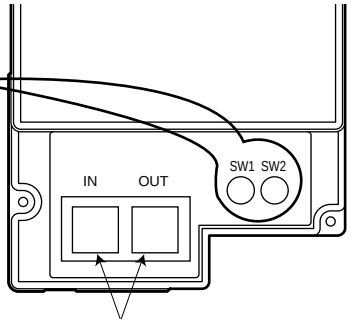


① SX bus connector

② Station No. setting switch



• UG02I-S



① SX bus connector

① SX bus connector

- Be sure to connect the cable that comes from OUT connector to the IN connector of the mating device.
  Communication is impossible if this cable is connected between OUT connectors or between IN connectors.
- For connection, be sure to use the dedicated SX bus extension cable.
  (For more information about the SX bus extension cable, refer to "2-2 Communication Specifications".)

② Station number setting switch

- This switch is used to set local station number on the SX bus. SW1 sets the high-order digit of station number while SW2, the low-order digit.
  Turn the rotary switches with a screwdriver to set a station number in the range from 00 to FF (hexadecimal).

The station number that is set on the POD side (with the above setting switches) must be the same as the station number that is set on the PLC side (using the [System_Definition] function of D300win). Communication is not normally performed if different station number is set.
For more information about the registration with D300win, refer to "5.1 Registration of POD".

Precautions for setting station No

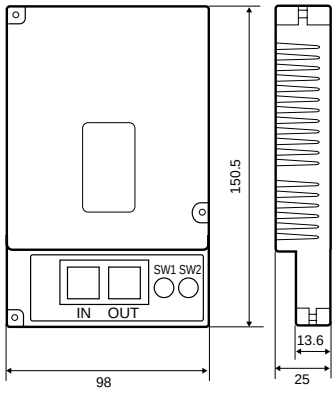
On the POD side, station number is set by "hexadecimal" number in the range from 00 to FF using the setting switch; on the PLC side, station number is set by "decimal" number in the range from 0 to 255 using D300win.

Example:
When station number is set to 10 (h) (by setting SW1 to "1" and SW2 to "0") on the POD side, "SX bus station number (N)" that is set by D300win on the PLC side must be "16".

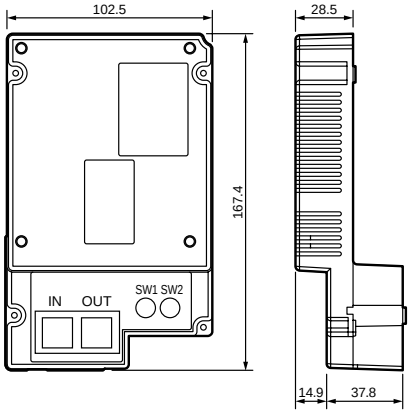
3.3 External Dimensions

SX bus interface unit

▪ UG03I-S



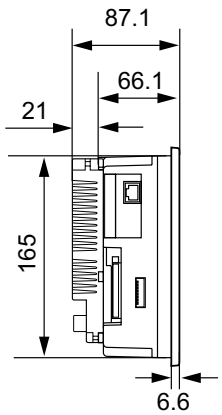
▪ UG02I-S



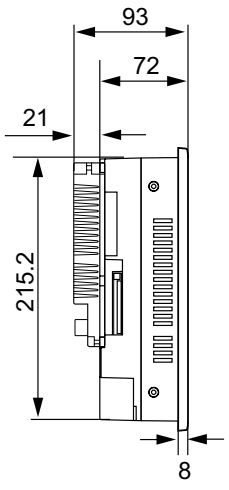
External dimensions when mounted on POD

▪ UG30 Series

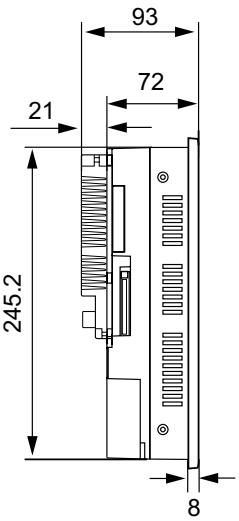
▪ UG330H



▪ UG430H

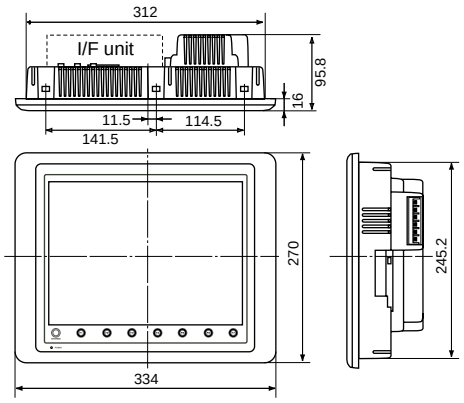


▪ UG530H

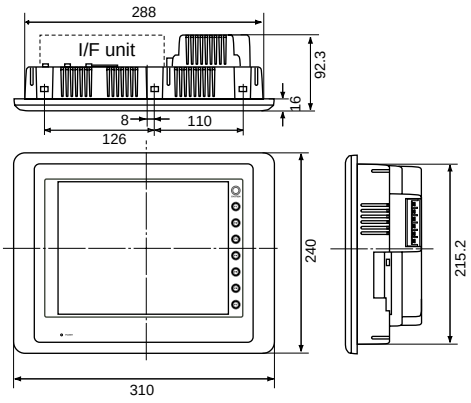


▪ UG20 Series

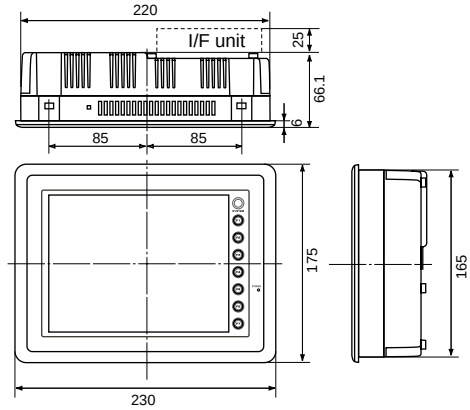
● UG520



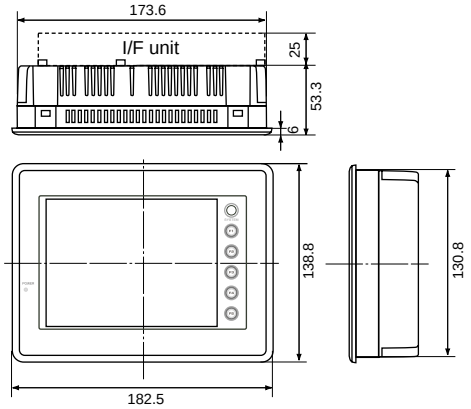
● UG420



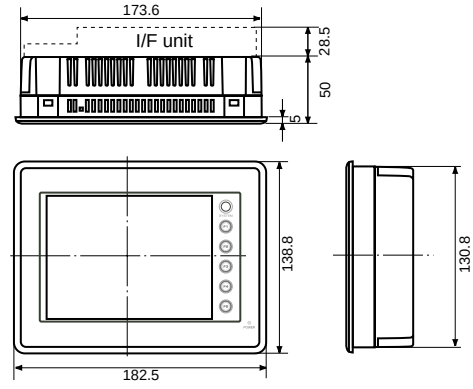
● UG320



● UG221



● UG220



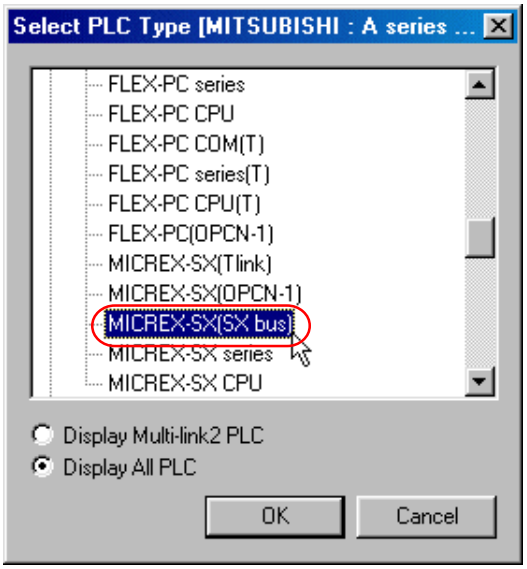
4 Screen Data Editing

This section describes the items to be set for SX Bus communications when creating screens with the editor (personal computer).
For more information about the way to set or use UG00S-CW , refer to user's manual [Function] (FEH376) .

> To create screen data for SX bus interface, use UG00S-CW , or Ver. 2.10 or higher UG00S-3WE (for Windows) .
> With UG00S-3WE of Ver. 2.10, UG00S-3N (for 98DOS) or UG00S-3D (for DOS/V), no definition can be made for SX bus interface.

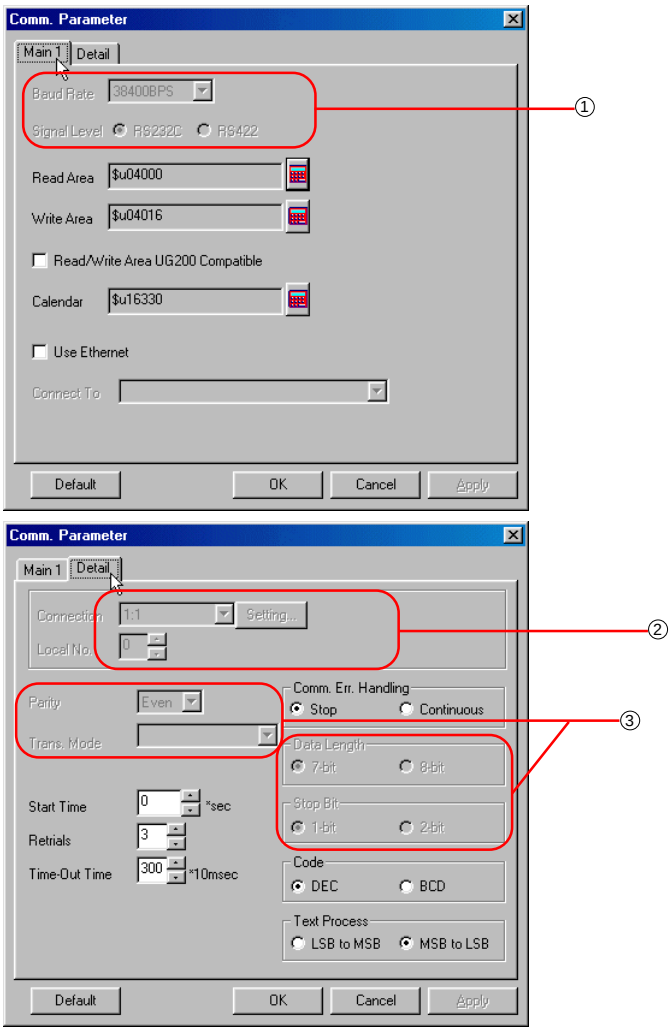
4.1 Select PLC Type

Click [System Setting], then click [PLC Type] . Select [FUJI ; MICREX-SX] on the [Select PLC Type] dialog.



4.2 Communication Parameters

For setting of [Comm. Parameter...] under [System Setting], differences from other communication methods are:



① **Baud rate/signal level**

These items are omitted.

② **Connection**

Needs not be set in this case. When 1:n connection (multiple sets of POD) is used, definition is made on the PLC side (D300win) as well as at individual SX bus station on the POD side.

For more information, refer to user's manual [Function] (FEH376).

③ **Parity, etc.**

Need not be set.

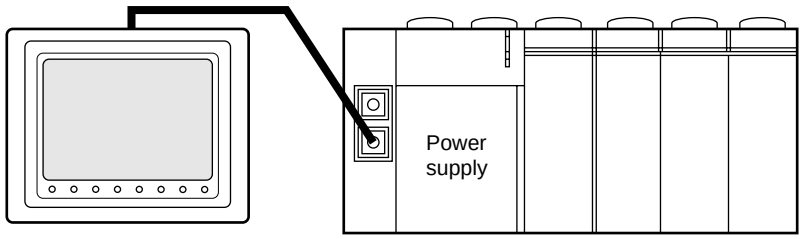
5 Registration on PLC Side (Setting with D300win)

This section describes how to set the PLC side program loader (D300win) in order to register the POD system that performs communication via SX bus interface. For other information about D300win, including operation method, refer to user's manual [D300win <Reference>] (FEH251).

Be sure to use Ver. 1.2.0.0 or newer D300win.

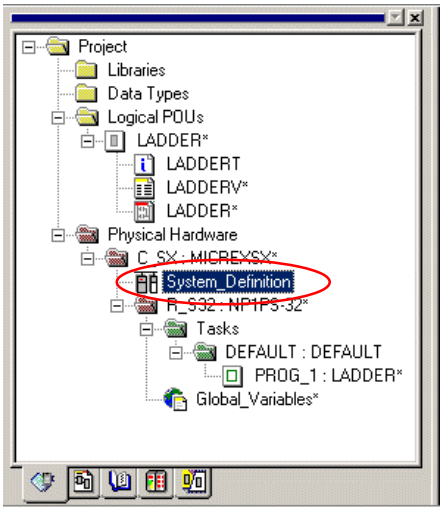
5.1 Registration of POD

The procedure to register the system configuration in which one set of POD is connected to SPH300 Series via SX bus interface is described below.

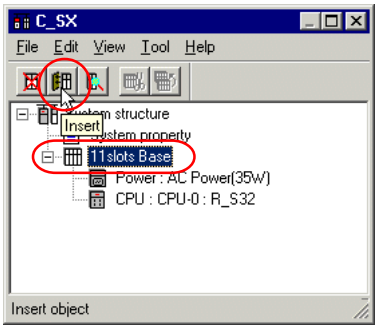


POD: SX bus station No. 1

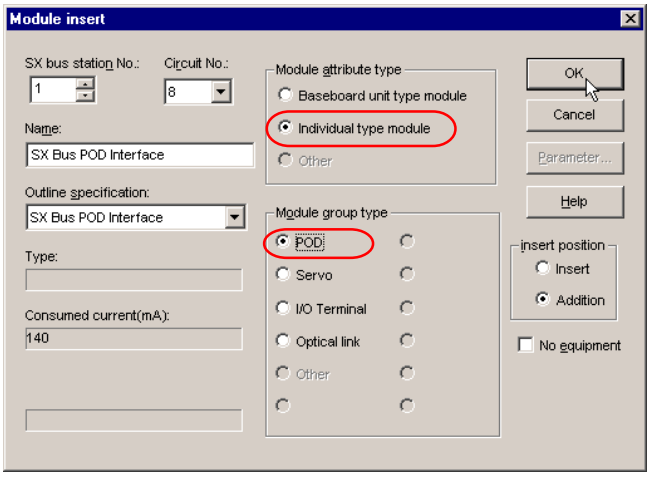
(1) Double-click the [System_Definition] icon in the D300win project tree.



(2) The system definition window is opened. On this window, click [Base] and then the [Insert] icon.

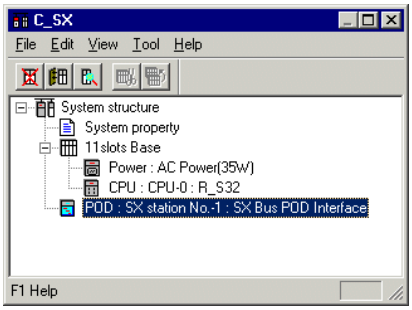


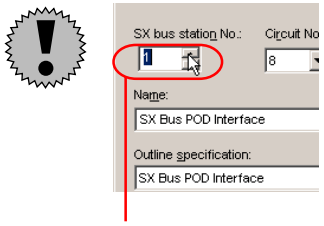
(3) The [Module Insert] dialog is displayed.
Turn ON the optional [Individual type module] button in the [Module attribute type] box.
Then, turn the optional [POD] button in the [Module group type] box.



Note: In the following case, [Individual type module] cannot be selected in the [Module attribute type] box:
→ [Individual type module] cannot be selected on the [Module Insert] dialog unless the [Base] icon is clicked (selected) in above step (2).

(4) Click the [OK] button on the [Module Insert] dialog.
You return to the system definition window.





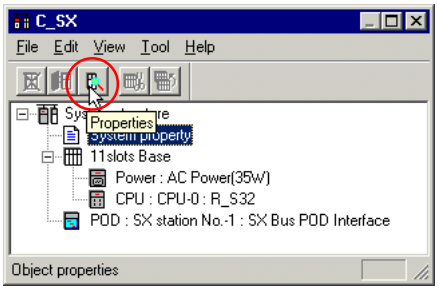
The SX bus station number that is registered using D300win must be the same as the SX bus station number that is indicated on the rear of the SX bus interface unit. If a different number is set, communication cannot normally be performed.

SX bus station number set by D300win
(Using the [Property] dialog of the module)

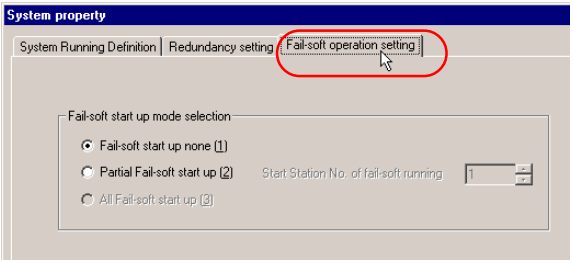
5.2 Registration of System Fail-Soft Startup Operation

POD is treated as a module with station number setting switch. Therefore, “System Fail-Soft Startup Operation Definition” is useful.

(1) On the system definition window, click [System Property] and then the [Property] button.



(2) The [System Property] dialog is displayed.
Double-click [Fail-soft operations setting] and select a desired fail-soft startup operation mode.



For more information about fail-soft startup operation mode, refer to user’s manual <Instruction>, MICREX-SX Series SPH (FEH200).

MEMO

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Information in this manual is subject to change without notice.

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